Arizona Corporation Commission

Docket No. L-00000B-04-0126

Pinal West to SEV/Browning 500 kV Line Siting

Presentation of Staff Witness
Jerry D. Smith

November 30, 2004

ACC Staff Witness

Name: **Jerry D. Smith**

Title: **Electric Utility Engineer**

Employer: **Arizona Corporation Commission**

Address: **Utilities Division**
1200 W. Washington
Phoenix, AZ 85007

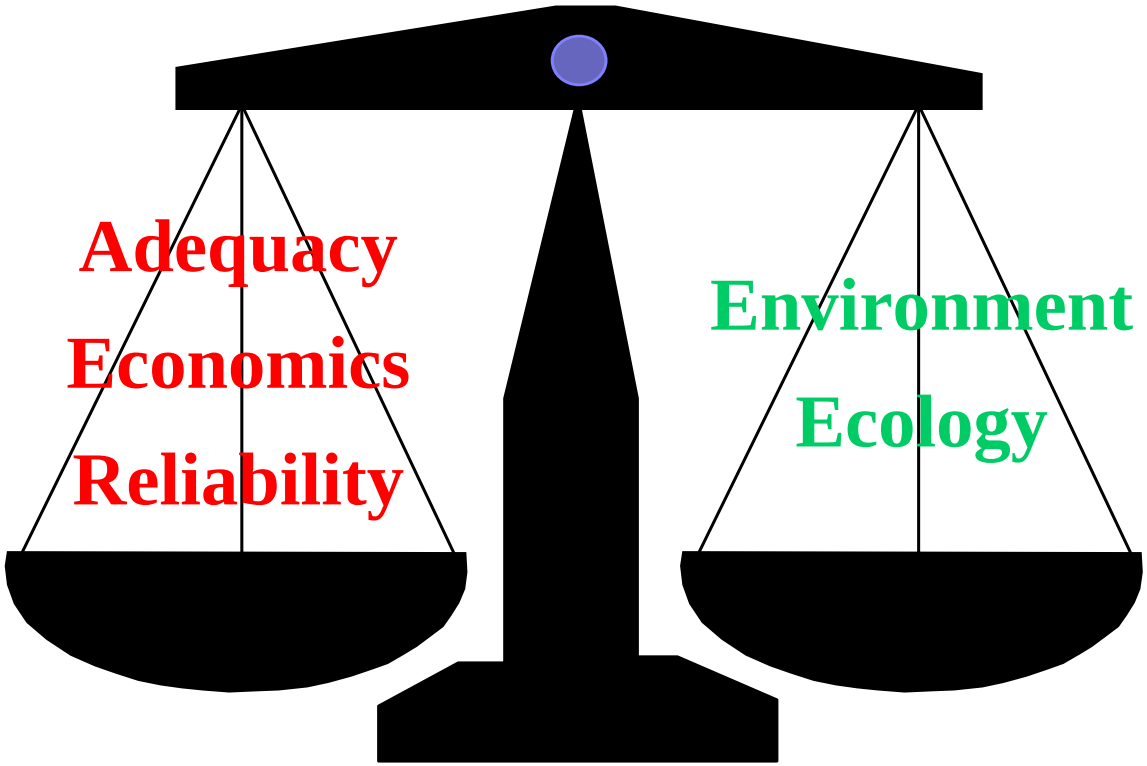
Professional Background

- B.S.E.E. - University of New Mexico
- M.S.E.E. - New Mexico State University
- Registered Arizona P.E. - Electrical
- 27 Yrs. Engineering and Management Experience with the Salt River Project
- Utility Regulatory Experience Since 2/99

Purpose of Testimony

- **Establish Hearing Record for Commission Consideration of its Balancing Test**
- **Contrast Project with Current 10 Year Plan and 2004 Biennial Transmission Assessment**
- **Staff Technical Assessment of Project**
  - Justification of Need
  - Reliability of Common Corridor or Consolidated Facilities

A.R.S. §40-360-07.B
ACC Balance Test



Public Interest

Adequacy and Reliability

Reliability is comprised of two components:

"Adequacy - The ability of the electric systems to supply the aggregate electrical demand and energy requirements of their customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements."

"Security - The ability of the electric systems to withstand sudden disturbances such as electric short circuits or unanticipated loss of system elements."

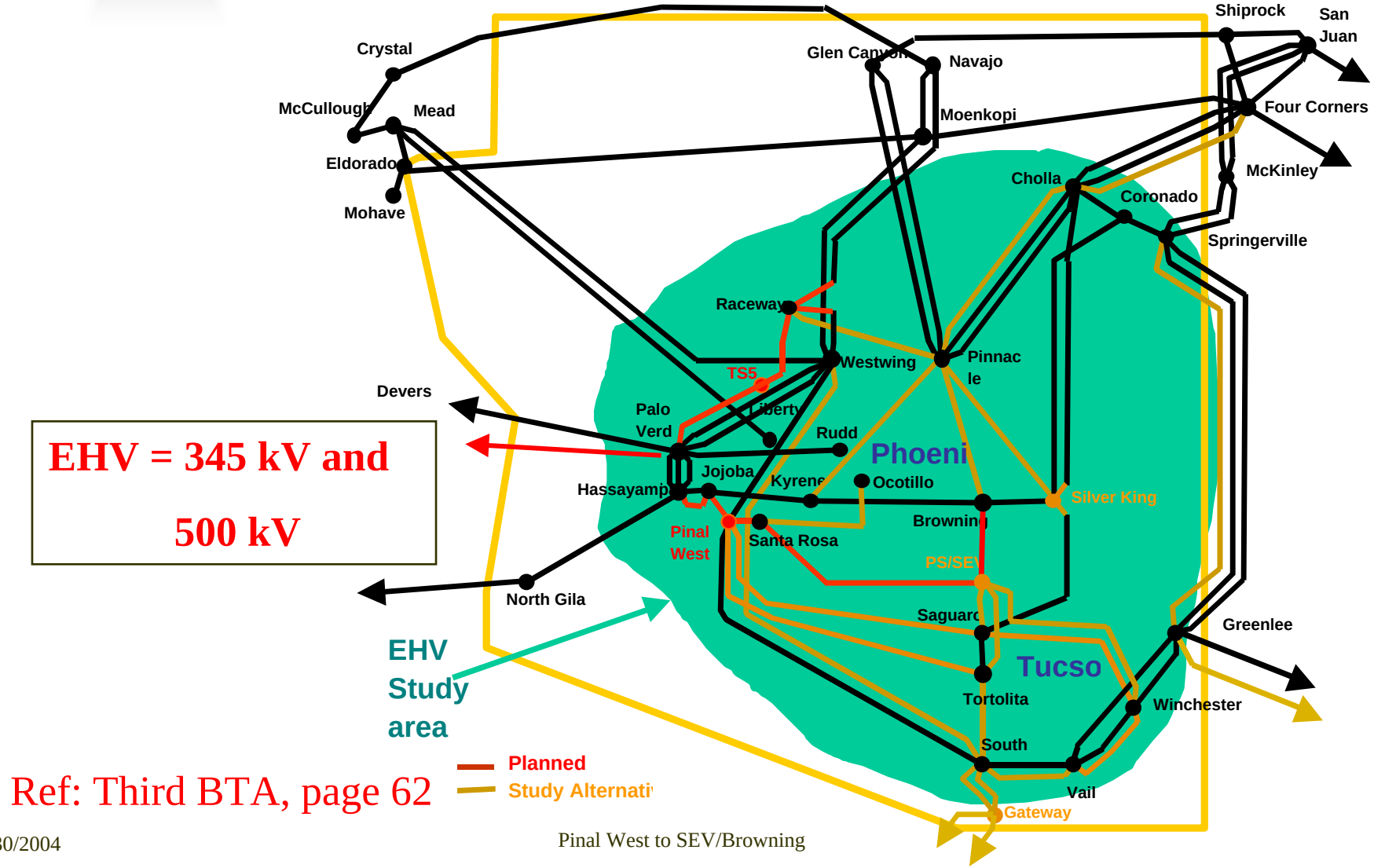
Additional Staff Proposed Measures of Reliability

- There should be sufficient transmission import capacity to reliably serve all loads in a utility's service area without limiting access to more economical or less polluting remote generation
- New power plants must have sufficient interconnected transmission capacity to reliably deliver its full output without use of remedial action schemes or displacing apriori generation at the same interconnection for single contingency (N-1) outages

BTA vs. 10 Year Plan

- **Biennial Transmission Assessment (BTA):**
  - Occurs on Even Numbered Years
  - Covers a Ten Year Period
  - Utilizes Most Recent Ten Year Plans
- **Third BTA Filed for Approval Nov. 30, 2004**
- **Ten Year Transmission Plans Filed Annually with Commission by January 31**
  - Most Recent Plans Filed January 2004
  - Covers 2004 thru 2013

Arizona
Planned EHV Lines



EHV = 345 kV and 500 kV

Ref: Third BTA, page 62

Ten Year Plan Filings By Project Participants

Per A.R.S. §40-360.02.A Statutory Requirement:

Project Participant	Jan. 31, 2003	Jan. 31, 2004
SRP	Yes	Yes
APS	Yes	Yes
ED-2	No	No
Santa Cruz Water & Power	No	Yes
SWTC	Yes	Yes
TEP	Yes	Yes[1]

[1] Notice of Errata correcting date of facility dated February 12, 2004.

2004 Ten Year Plan Filings By Project Elements

Per A.R.S. §40-360.02.A Statutory Requirement:

Project Element	Service Date[1]	2004
Palo Verde - Pinal West 500 kV	2006	Yes
Pinal West – Santa Rosa 500 k V	2007	Yes
Santa Rosa – Pinal South/SEV 500 kV	2011	Yes
Santa Rosa – Pinal South/SEV 230 kV	?	No
SEV-Browning 500 kV	2011	Yes
SEV-RS19-Browning 230 KV	TBD/2008	Yes

[1] Per CEC applications.

3rd Biennial Transmission Assessment - Key Conclusions

- **Existing and Planned Transmission Facilities Meet Load Serving Requirements of Arizona in a Reliable Manner. (Without the Planned Facilities A Different Conclusion May Have Been Reached)**
- **The Palo Verde to TS5 to Raceway and Palo Verde to Browning Projects Will Significantly Increase the Outlet Capability of the Palo Verde Hub to Arizona.**
- **Existing Transmission from Palo Verde to California is Inadequate to Allow All New Palo Verde Hub Generation Full Access to the California Market Under Weak Arizona Market Conditions.**

Benefits of Proposed Project

- **New Line Capacity Meeting Local Consumer Needs:**
  - Metropolitan Phoenix Area (APS and SRP)
  - Pinal County (APS, SRP, Santa Cruz Water & Power Districts Association)
  - Cochise and Pima County (SWTC, TEP)
- **Wholesale Market Opportunities**
  - Improves Merchant Power Plants' Access to Multiple Markets
- **Helps Mitigate Existing Palo Verde Hub Reliability Risks and Local RMR Constraints**

Staff Assessment (1 of 2)

- **Staff Believes the Proposed Facilities are Needed and Applicant Has Met The Need Justification Burden for**
  - 500 kV Line From Pinal West to Browning
  - 230 kV Line From SEV – RS19 – Browning
- **Do Not Support Approval of a 230 kV Line From Santa Rosa to SEV via this Project for the Following Reasons:**
  - No Specific 230 kV Line Has Been Identified
  - Fails to Comply with A.R.S. §40-360.02.A Since No Ten-Year Plan Has Been Submitted for Such a Line
  - Fails to Comply with A.R.S. §40-360.02.C.7 Since No Technical Studies Have Been Submitted for Such Line

Staff Assessment (2 of 2)

- **Support Provision for Future 500 kV Interconnection With the Pinal West to Browning 500 kV Line at:**
  - **Santa Rosa Substation (Exhibit G-10)**
  - **Pinal South Substation (Exhibit G-11)**
  - **South East Valley Substation (Exhibit G-12)**
- **Support Use of Vertical 500 kV Poles (per Exhibit G-1) From Santa Rosa to SEV as Needed to Accommodate Consolidation of Future Lines (per Exhibit G-2) Not Yet Planned, Studied or Sited Provided Such Future Lines Do Not Pose Unreasonable System Reliability Risk**
- **Staff Supports the Proposed Route Given There Are No Compelling Arguments an Alternative is Superior.**

Consolidated Facilities and Common Corridors (1 of 2)

- **Staff Supports Consolidation of Facilities For Environmental and Aesthetic Purposes if System Reliability is Not Compromised**
- **Staff Also Supports Use of Common Corridors if System Reliability is Not Compromised**
- **Consolidation of Proposed Facilities or Use of Common Corridors w/o Consideration of Technical Consequences Is Inappropriate Planning**

Consolidated Facilities and Common Corridors (2 of 2)

- **Reliability Impacts of Consolidating Facilities or Using A Common Corridor are Generally Lessened When:**
  - Lines Are of a Different Voltage Class (ie. 230 kV vs. 500 kV)
  - Lines Do Not Share a Common Terminus
  - Lines Connect to Segregated Service Areas or Geographical Areas (ie. TEP's Tucson Service Area and SRP's Phoenix Service Area)

Questions ?